



003300-723.ST25

SEQUENCE LISTING

<110> Hanson, Lars A.
Baltzer, Lars
Mattsbj-Baltzer, Inger
Dolphin, Gunnar T.

<120> Peptides Based on the Sequence of Human Lactoferrin
and Their Use

<130> 003300-723

<140> US 09/743,107
<141> 2001-08-21

<150> PCT/SE99/01230
<151> 2000-09-29

<150> SE 9802441-7
<151> 1998-07-06

<150> SE 9802562-0
<151> 1998-07-17

<150> SE 9804614-7
<151> 1998-12-29

<160> 102

<170> PatentIn version 2.1

<210> 1
<211> 25
<212> PRT
<213> Artificial Sequence

<220>
<221> MOD_RES
<222> (1)
<223> ACETYLATION

<220>
<221> PEPTIDE
<222> (1)
<223> Amino acid 1 is Xaa wherein Xaa = Glu or no amino acid.

<220>
<221> PEPTIDE
<222> (2)
<223> Amino acid 2 is Xaa wherein Xaa = Ala or no amino acid.

<220>
<221> PEPTIDE
<222> (5)
<223> Amino acid 5 is Xaa wherein Xaa = Cys or Ala.

<220>
<221> PEPTIDE

<222> (7)
 <223> Amino acid 7 is Xaa wherein Xaa = Gln or Lys.

<220>
 <221> PEPTIDE
 <222> (11)
 <223> Amino acid 11 is Xaa wherein Xaa = Asn or Asp.

<220>
 <221> PEPTIDE
 <222> (17)..(25)
 <223> Amino acids 17-25 are Xaa wherein Xaa = Gly, Pro, Pro, Val, Ser, Cys, Ile, Lys, Arg

<220>
 <221> MOD_RES
 <222> (25)
 <223> AMIDATION

<220>
 <223> Description of Artificial Sequence: of natural or artificial origin, corresponding to modification of the sequence consisting of aa 16-40 in human lactoferrin

<400> 1

Xaa	Xaa	Thr	Lys	Xaa	Phe	Xaa	Trp	Gln	Arg	Xaa	Met	Arg	Lys	Val	Arg
1				5					10					15	

Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa	Xaa
			20					25	

<210> 2
 <211> 25
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLATION

<220>
 <221> MOD_RES
 <222> (25)
 <223> AMIDATION

<220>
 <223> Description of Artificial Sequence: of natural or artificial origin, corresponding to a modification of the sequence consisting of amino acids 16-40 in human lactoferrin

<400> 2

Glu	Ala	Thr	Lys	Cys	Phe	Gln	Trp	Gln	Arg	Asn	Met	Arg	Lys	Val	Arg
1				5					10					15	

Gly	Pro	Pro	Val	Ser	Cys	Ile	Lys	Arg
			20					25

<210> 3
 <211> 25
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLATION

<220>
 <221> MOD_RES
 <222> (25)
 <223> AMIDATION

<220>
 <221> DISULFID
 <222> (5)..(22)

<220>
 <223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to a modification
 of the sequence consisting of amino acids 16-40 in
 human lactoferrin

<400> 3
 Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10 15
 Gly Pro Pro Val Ser Cys Ile Lys Arg
 20 25

<210> 4
 <211> 23
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLATION

<220>
 <221> MOD_RES
 <222> (23)..(23)
 <223> AMIDATION

<220>
 <223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to a modification
 of the sequence consisting of amino acids 18-40 in
 human lactoferrin

<400> 4
 Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg Gly Pro

1	5	10	15
---	---	----	----

Pro Val Ser Cys Ile Lys Arg
20

<210> 5
 <211> 23
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLATION

<220>
 <221> MOD_RES
 <222> (23)
 <223> AMIDATION

<220>
 <221> DISULFID
 <222> (3)..(20)

<220>
 <223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to a modification
 of the sequence consisting of amino acids 18-40 in
 human lactoferrin

<400> 5
 Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg Gly Pro
 1 5 10 15

Pro Val Ser Cys Ile Lys Arg
20

<210> 6
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLATION

<220>
 <221> MOD_RES
 <222> (14)
 <223> AMIDATION

<220>
 <223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to a modification

of the sequence consisting of amino acids 18-31 in
human lactoferrin

<400> 6

Thr Lys Ala Phe Lys Trp Gln Arg Asp Met Arg Lys Val Arg
1 5 10

<210> 7

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<221> MOD_RES

<222> (1)

<223> ACETYLATION

<220>

<221> MOD_RES

<222> (14)

<223> AMIDATION

<220>

<221> BINDING

<222> (5)..(9)

<223> LACTAM

<220>

<223> Description of Artificial Sequence: of natural or
artificial origin, corresponding to a modification
of the sequence consisting of aa 18-31 in human
lactoferrin; a lactam is formed between aa 5 and 9

<400> 7

Thr Lys Ala Phe Lys Trp Gln Arg Asp Met Arg Lys Val Arg
1 5 10

<210> 8

<211> 20

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 12-31 of the protein
human lactoferrin

<400> 8

Val Ser Gln Pro Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met
1 5 10 15

Arg Lys Val Arg
20

<210> 9
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 12-18 of the protein
human lactoferrin

<400> 9
Val Ser Gln Pro Glu Ala Thr
1 5

<210> 10
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 13-19 of the protein
human lactoferrin

<400> 10
Ser Gln Pro Glu Ala Thr Lys
1 5

<210> 11
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 14-20 of the protein
human lactoferrin

<400> 11
Gln Pro Glu Ala Thr Lys Cys
1 5

<210> 12
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of

natural or artificial origin consisting of the
amino acids in positions 15-21 of the protein
human lactoferrin

<400> 12

Pro Glu Ala Thr Lys Cys Phe
1 5

<210> 13

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 16-22 of the protein
human lactoferrin

<400> 13

Glu Ala Thr Lys Cys Phe Gln
1 5

<210> 14

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 17-23 of the protein
human lactoferrin

<400> 14

Ala Thr Lys Cys Phe Gln Trp
1 5

<210> 15

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 18-24 of the protein
human lactoferrin

<400> 15

Thr Lys Cys Phe Gln Trp Gln
1 5

<210> 16
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 19-25 of the protein
human lactoferrin

<400> 16
Lys Cys Phe Gln Trp Gln Arg
1 5

<210> 17
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 20-26 of the protein
human lactoferrin

<400> 17
Cys Phe Gln Trp Gln Arg Asn
1 5

<210> 18
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 21-27 of the protein
human lactoferrin

<400> 18
Phe Gln Trp Gln Arg Asn Met
1 5

<210> 19
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of

natural or artificial origin consisting of the
amino acids in positions 22-28 of the protein
human lactoferrin

<400> 19

Gln Trp Gln Arg Asn Met Arg
1 5

<210> 20

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 23-29 of the protein
human lactoferrin

<400> 20

Trp Gln Arg Asn Met Arg Lys
1 5

<210> 21

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 24-30 of the protein
human lactoferrin

<400> 21

Gln Arg Asn Met Arg Lys Val
1 5

<210> 22

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 25-31 of the protein
human lactoferrin

<400> 22

Arg Asn Met Arg Lys Val Arg
1 5

<210> 23
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Peptide of natural or artificial origin consisting of the amino acids in positions 16-23 of the protein human lactoferrin

<400> 23
 Glu Ala Thr Lys Cys Phe Gln Trp
 1 5

<210> 24
 <211> 9
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Peptide of natural or artificial origin consisting of the amino acids in positions 16-24 of the protein human lactoferrin

<400> 24
 Glu Ala Thr Lys Cys Phe Gln Trp Gln
 1 5

<210> 25
 <211> 10
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Peptide of natural or artificial origin consisting of the amino acids in positions 16-25 of the protein human lactoferrin

<400> 25
 Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg
 1 5 10

<210> 26
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Peptide of

natural or artificial origin consisting of the
amino acids in positions 16-26 of the protein
human lactoferrin

<400> 26

Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn
1 5 10

<210> 27

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 16-27 of the protein
human lactoferrin

<400> 27

Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met
1 5 10

<210> 28

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 16-28 of the protein
human lactoferrin

<400> 28

Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg
1 5 10

<210> 29

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 16-29 of the protein
human lactoferrin

<400> 29

Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys
1 5 10

<210> 30
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Peptide of natural or artificial origin consisting of the amino acids in positions 16-30 of the protein human lactoferrin

<400> 30
 Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val
 1 5 10 15

<210> 31
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Peptide of natural or artificial origin consisting of the amino acids in positions 16-31 of the protein human lactoferrin

<400> 31
 Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10 15

<210> 32
 <211> 19
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Peptide of natural or artificial origin consisting of the amino acids in positions 13-31 of the protein human lactoferrin

<400> 32
 Ser Gln Pro Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg
 1 5 10 15

Lys Val Arg

<210> 33
 <211> 18
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of natural or artificial origin consisting of the amino acids in positions 14-31 of the protein human lactoferrin

<400> 33

Gln Pro Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys
 1 5 10 15

Val Arg

<210> 34

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of natural or artificial origin consisting of the amino acids in positions 15-31 of the protein human lactoferrin

<400> 34

Pro Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val
 1 5 10 15

Arg

<210> 35

<211> 15

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of natural or artificial origin consisting of the amino acids in positions 17-31 of the protein human lactoferrin!

<400> 35

Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10 15

<210> 36

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of

natural or artificial origin consisting of the
amino acids in positions 18-31 of the protein
human lactoferrin

<400> 36

Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 37

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 19-31 of the protein
human lactoferrin

<400> 37

Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 38

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 20-31 of the protein
human lactoferrin

<400> 38

Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 39

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 21-31 of the protein
human lactoferrin

<400> 39

Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 40
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 22-31 of the protein
human lactoferrin

<400> 40
Gln Trp Gln Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 41
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 23-31 of the protein
human lactoferrin

<400> 41
Trp Gln Arg Asn Met Arg Lys Val Arg
1 5

<210> 42
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Peptide of
natural or artificial origin consisting of the
amino acids in positions 24-31 of the protein
human lactoferrin

<400> 42
Gln Arg Asn Met Arg Lys Val Arg
1 5

<210> 43
<211> 11
<212> PRT
<213> Artificial Sequence

<220>
<221> PEPTIDE

<222> (2)..(10)
 <223> Amino acids 2, 4, 6 and 10 are Xaa wherein Xaa = Gln, Lys, Asp, Asn or Val.

<220>
 <223> Description of Artificial Sequence: of natural or artificial origin, corresponding to a modification of the sequence consisting of amino acids 21-31 in human lactoferrin

<400> 43
 Phe Xaa Trp Xaa Arg Xaa Met Arg Lys Xaa Arg
 1 5 10

<210> 44
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: of natural or artificial origin, corresponding to the sequence consisting of amino acids 21-31 in human lactoferrin

<400> 44
 Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 45
 <211> 11
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: of natural or artificial origin, corresponding to the sequence consisting of aa 21-31 in human lactoferrin wherein one aa has been substituted

<400> 45
 Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 46
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin

wherein one aa has been substituted

<400> 46

Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 47

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<221> MOD_RES

<222> (1)

<223> ACETYLATION

<220>

<221> MOD_RES

<222> (12)

<223> AMIDATION

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin wherein one aa has been substituted

<400> 47

Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 48

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 19-31 in human lactoferrin wherein one aa has been substituted

<400> 48

Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 49

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<221> MOD_RES
 <222> (1)
 <223> ACETYLTATION

<220>
 <221> MOD_RES
 <222> (13)
 <223> AMIDATION

<220>
 <223> Description of Artificial Sequence:of natural or
 artificial origin, corresponding to the sequence
 consisting of aa 19-31 in human lactoferrin
 wherein one aa has been modified

<400> 49
 Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 50
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:of natural or
 artificial origin, corresponding to the sequence
 consisting of aa 18-31 in human lactoferrin
 wherein one aa has been substituted

<400> 50
 Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 51
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLTATION

<220>
 <221> MOD_RES
 <222> (14)
 <223> AMIDATION

<220>
 <223> Description of Artificial Sequence:of natural or
 artificial origin, corresponding to the sequence
 consisting of aa 18-31 in human lactoferrin

wherein one aa has been substituted

<400> 51

Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 52

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: of natural or artificial origin, corresponding to a modification of the sequence consisting of amino acids 18-31 in human lactoferrin

<400> 52

Thr Lys Ala Phe Lys Trp Gln Arg Asp Met Arg Lys Val Arg
1 5 10

<210> 53

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: of natural or artificial origin, corresponding to a modification of the sequence consisting of amino acids 18-31 in human lactoferrin

<220>

<221> MOD_RES

<222> (1)

<223> ACETYLTATION

<220>

<221> MOD_RES

<222> (14)

<223> AMIDATION

<400> 53

Thr Lys Ala Phe Lys Trp Gln Arg Glu Met Arg Lys Val Arg
1 5 10

<210> 54

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: of natural or

artificial origin, corresponding to a modification of the sequence consisting of aa 18-31 in human lactoferrin; a lactam is formed between aa 5 and 9

<220>

<221> BINDING

<222> (5)..(9)

<223> LACTAM

<400> 54

Thr Lys Ala Phe Lys Trp Gln Arg Asp Met Arg Lys Val Arg
 1 5 10

<210> 55

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: of natural or artificial origin, corresponding to a modification of the sequence consisting of aa 18-31 in human lactoferrin; a lactam is formed between aa 5 and 9

<220>

<221> MOD_RES

<222> (1)

<223> ACETYLTATION

<220>

<221> MOD_RES

<222> (14)

<223> AMIDATION

<220>

<221> BINDING

<222> (5)..(9)

<223> LACTAM

<400> 55

Thr Lys Ala Phe Lys Trp Gln Arg Glu Met Arg Lys Val Arg
 1 5 10

<210> 56

<211> 14

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: of natural or artificial origin, corresponding to a modification of the sequence consisting of amino acids 18-31 in human lactoferrin

<400> 56

Thr Lys Lys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 57
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: of natural or artificial origin, corresponding to a modification of the sequence consisting of amino acids 18-31 in human lactoferrin

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLATION

<220>
 <221> MOD_RES
 <222> (14)
 <223> AMIDATION

<400> 57
 Thr Lys Lys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 58
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: of natural or artificial origin, corresponding to a modification of the sequence consisting of amino acids 18-31 in human lactoferrin

<400> 58
 Thr Lys Lys Phe Gln Trp Asp Arg Lys Met Arg Lys Asp Arg
 1 5 10

<210> 59
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: of natural or artificial origin, corresponding to a modification of the sequence consisting of amino acids 18-31 in human lactoferrin

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLATION

<220>
 <221> MOD_RES
 <222> (14)
 <223> AMIDATION

<400> 59
 Thr Lys Lys Phe Gln Trp Asp Arg Lys Met Arg Lys Asp Arg
 1 5 10

<210> 60
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: of natural or artificial
 origin, corresp. to a modification of the seq. consisting
 of aa 18-31 in human lactoferrin; lactams formed between aa
 3 and 7, and 9 and 13

<220>
 <221> BINDING
 <222> (3)..(7)
 <223> LACTAM

<220>
 <221> BINDING
 <222> (9)..(13)
 <223> LACTAM

<400> 60
 Thr Lys Lys Phe Gln Trp Asp Arg Lys Met Arg Lys Asp Arg
 1 5 10

<210> 61
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: of natural or artificial
 origin, corresp. to a modification of the seq. consisting
 of aa 18-31 in human lactoferrin; lactams formed between aa
 3 and 7, and 9 and 13

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLATION

<220>
 <221> MOD_RES
 <222> (14)
 <223> AMIDATION

<220>
 <221> BINDING
 <222> (3)..(7)
 <223> LACTAM

<220>
 <221> BINDING
 <222> (9)..(13)
 <223> LACTAM

<400> 61
 Thr Lys Lys Phe Gln Trp Asp Arg Lys Met Arg Lys Asp Arg
 1 5 10

<210> 62
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to the sequence
 consisting of amino acids 17-31 in human
 lactoferrin

<400> 62
 Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10 15

<210> 63
 <211> 15
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to a modification
 of the sequence consisting of amino acids 17-31 in
 human lactoferrin

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLATION

<220>
 <221> MOD_RES
 <222> (15)
 <223> AMIDATION

<400> 63

Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10 15

<210> 64

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to the sequence
 consisting of amino acids 16-31 in human
 lactoferrin

<400> 64

Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10 15

<210> 65

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to a modification
 of the sequence consisting of amino acids 16-31 in
 human lactoferrin

<220>

<221> MOD_RES

<222> (1)

<223> ACETYLTATION

<220>

<221> MOD_RES

<222> (16)

<223> AMIDATION

<400> 65

Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10 15

<210> 66

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to the sequence
 consisting of amino acids 15-31 in human

lactoferrin

<400> 66

Pro Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val
 1 5 10 15

Arg

<210> 67

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to a modification
 of the sequence consisting of amino acids 15-31 in
 human lactoferrin

<220>

<221> MOD_RES

<222> (1)

<223> ACETYLATION

<220>

<221> MOD_RES

<222> (17)

<223> AMIDATION

<400> 67

Pro Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val
 1 5 10 15

Arg

<210> 68

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: of natural or
 artificial origin, corresponding to the sequence
 consisting of aa 20-31 in human lactoferrin
 wherein one aa has been substituted

<400> 68

Ala Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 69

<211> 12
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin wherein one aa has been substituted

<400> 69

Cys Ala Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 70
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin wherein one aa has been substituted

<400> 70

Cys Phe Ala Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 71
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin wherein one aa has been substituted

<400> 71

Cys Phe Gln Ala Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 72
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin

wherein one aa has been substituted

<400> 72

Cys Phe Gln Trp Ala Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 73

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been modified

<400> 73

Cys Phe Gln Trp Gln Ala Asn Met Arg Lys Val Arg
1 5 10

<210> 74

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<400> 74

Cys Phe Gln Trp Gln Arg Ala Met Arg Lys Val Arg
1 5 10

<210> 75

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<400> 75

Cys Phe Gln Trp Gln Arg Asn Ala Arg Lys Val Arg
1 5 10

<210> 76
<211> 12
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<400> 76

Cys	Phe	Gln	Trp	Gln	Arg	Asn	Met	Ala	Lys	Val	Arg
1				5					10		

<210> 77
<211> 12
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<400> 77

Cys	Phe	Gln	Trp	Gln	Arg	Asn	Met	Arg	Ala	Val	Arg
1				5					10		

<210> 78
<211> 12
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<400> 78

Cys	Phe	Gln	Trp	Gln	Arg	Asn	Met	Arg	Lys	Ala	Arg
1				5					10		

<210> 79
<211> 12
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence

consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<400> 79

Cys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Ala
1 5 10

<210> 80

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<400> 80

Cys Phe Gln Leu Gln Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 81

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<400> 81

Cys Phe Gln Trp Gln Lys Asn Met Arg Lys Val Arg
1 5 10

<210> 82

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<400> 82

Cys Phe Gln Trp Gln Arg Asn Leu Arg Lys Val Arg
1 5 10

<210> 83
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin wherein one aa has been substituted

<400> 83

Cys Phe Gln Trp Gln Arg Asn Met Lys Lys Val Arg
 1 5 10

<210> 84
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin wherein one aa has been substituted

<400> 84

Cys Phe Gln Trp Glu Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 85
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin wherein one aa has been substituted

<400> 85

Cys Phe Gln Trp Gln Glu Asn Met Arg Lys Val Arg
 1 5 10

<210> 86
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence

consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<400> 86

Cys Phe Gln Trp Gln Arg Glu Met Arg Lys Val Arg
1 5 10

<210> 87

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<220>

<221> MISC_FEATURE

<222> (5)

<223> Amino acid 5 is Xaa wherein Xaa = Orn.

<400> 87

Cys Phe Gln Trp Xaa Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 88

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
artificial origin, corresponding to the sequence
consisting of aa 20-31 in human lactoferrin
wherein one aa has been substituted

<220>

<221> MISC_FEATURE

<222> (5)

<223> Amino acid 5 is Xaa wherein Xaa = Nle.

<400> 88

Cys Phe Gln Trp Xaa Arg Asn Met Arg Lys Val Arg
1 5 10

<210> 89

<211> 12

<212> PRT

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:of natural or
 artificial origin, corresponding to the sequence
 consisting of aa 20-31 in human lactoferrin
 wherein one aa has been substituted

<220>
 <221> MISC_FEATURE
 <222> (7)
 <223> Amino acid 7 is Xaa wherein Xaa = Orn.

<400> 89
 Cys Phe Gln Trp Gln Arg Xaa Met Arg Lys Val Arg
 1 5 10

<210> 90
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:of natural or
 artificial origin, corresponding to the sequence
 consisting of aa 20-31 in human lactoferrin
 wherein one aa has been substituted

<220>
 <221> MISC_FEATURE
 <222> (7)
 <223> Amino acid 7 is Xaa wherein Xaa = Nle.

<400> 90
 Cys Phe Gln Trp Gln Arg Xaa Met Arg Lys Val Arg
 1 5 10

<210> 91
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:of natural or
 artificial origin, corresponding to the sequence
 consisting of aa 20-31 in human lactoferrin
 wherein one aa has been substituted

<400> 91
 Cys Phe Gln Trp Lys Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 92

<211> 12
 <212> PRT
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresp. to a modification of the sequence consisting of aa 18-31 in human lactoferrin

<220>

<221> MOD_RES

<222> (1)

<223> ACETYLATION

<220>

<221> MOD_RES

<222> (12)

<223> AMIDATION

<220>

<221> BINDING

<222> (5)..(9)

<400> 92

Cys	Phe	Gln	Trp	Lys	Arg	Asn	Met	Arg	Lys	Val	Arg
1				5					10		

<210> 93

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin wherein some aa have been substituted

<400> 93

Cys	Phe	Gln	Trp	Lys	Arg	Ala	Met	Arg	Lys	Val	Arg
1				5					10		

<210> 94

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or artificial origin, corresponding to the sequence consisting of aa 20-31 in human lactoferrin wherein some aa have been substituted

<400> 94

Cys Phe Ala Trp Lys Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 95

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
 artificial origin, corresponding to the sequence
 consisting of aa 20-31 in human lactoferrin
 wherein some aa have been substituted

<400> 95

Cys Phe Ala Trp Gln Arg Ala Met Arg Lys Val Arg
 1 5 10

<210> 96

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
 artificial origin, corresponding to the sequence
 consisting of aa 20-31 in human lactoferrin
 wherein some aa have been substituted

<400> 96

Cys Phe Gln Leu Lys Lys Asn Met Lys Lys Val Arg
 1 5 10

<210> 97

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:of natural or
 artificial origin, corresp. to a modification of
 the sequence consisting of aa 20-31 in human
 lactoferrin

<220>

<221> BINDING

<222> (5)..(9)

<400> 97

Cys Phe Ala Leu Lys Lys Ala Met Lys Lys Val Arg
 1 5 10

<210> 98
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:of natural or artificial origin, corresp. to a modification of the sequence consisting of aa 18-31 in human lactoferrin

<220>
 <221> BINDING
 <222> (5)..(9)

<220>
 <221> MOD_RES
 <222> (1)
 <223> ACETYLATION

<220>
 <221> MOD_RES
 <222> (14)
 <223> AMIDATION

<400> 98
 Thr Lys Lys Phe Gln Trp Gln Arg Asn Met Arg Lys Val Arg
 1 5 10

<210> 99
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:of natural or artificial origin, corresp. to a modification of the sequence consisting of aa 20-31 in human lactoferrin

<220>
 <221> PEPTIDE
 <222> (3)
 <223> Amino acid 3 is Xaa wherein Xaa = Gln or Ala.

<220>
 <221> PEPTIDE
 <222> (4)
 <223> Amino acid 4 is Xaa wherein Xaa = Trp or Leu.

<220>
 <221> PEPTIDE
 <222> (5)
 <223> Amino acid 5 is Xaa wherein Xaa = Gln, Lys, Orn, Ala or Nle.

<220>
 <221> PEPTIDE
 <222> (6)
 <223> Amino acid 6 is Xaa wherein Xaa = Arg, Lys or Ala.

 <220>
 <221> PEPTIDE
 <222> (7)
 <223> Amino acid 7 is Xaa wherein Xaa = Asn, Orn, Ala or Nle.

 <220>
 <221> PEPTIDE
 <222> (8)
 <223> Amino acid 8 is Xaa wherein Xaa = Met or Leu.

 <220>
 <221> PEPTIDE
 <222> (9)
 <223> Amino acid 9 is Xaa wherein Xaa = Arg or Lys.

 <220>
 <221> BINDING
 <222> (5)..(9)

<400> 99
 Cys Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Lys Val Arg
 1 5 10

<210> 100
 <211> 29
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:a fragment of
 human lactoferrin consisting of the amino acids in
 positions 12-40

<400> 100
 Val Ser Gln Pro Glu Ala Thr Lys Cys Phe Gln Trp Gln Arg Asn Met
 1 5 10 15

Arg Lys Val Arg Gly Pro Pro Val Ser Cys Ile Lys Arg
 20 25

<210> 101
 <211> 9
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> of natural or artificial origin, corresponding to
 modification of the sequence consisting of amino
 acids 16-40 in human lactoferrin of SEQ ID NO. 2

<400> 101

Gly Pro Pro Val Ser Cys Ile Lys Arg
 1 5

<210> 102

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> of natural or artificial origin, not a
 modification of the sequence consisting of amino
 acids 18-31 in human lactoferrin of SEQ ID NO. 99

<400> 102

Glu Ala Thr Lys
 1